CPP 程式設計題

題目名稱(中文/英文)：質數加減(PrimeNumber)

主要測試觀念： Class 設計

Basics

	Functions
☐ C++ BASICS 1	☐ SEPARATE COMPILATION AND NAMESPACES
☐ FLOW OF CONTROL	☐ STREAMS AND FILE I/O
☐ FUNCTION BASICS	☐ RECURSION
☐ PARAMETERS AND OVERLOADING	☐ INHERITANCE
☐ ARRAYS	☐ POLYMORPHISM AND VIRTUAL FUNCTIONS
☐ STRUCTURES AND CLASSES	☐ TEMPLATES
■ CONSTRUCTORS AND OTHER TOOLS	☐ LINKED DATA STRUCTURES
☐ OPERATOR OVERLOADING, FRIENDS, AND REFERENCES	☐ EXCEPTION HANDLING
☐ STRINGS	☐ STANDARD TEMPLATE LIBRARY
☐ POINTERS AND DYNAMIC ARRAYS	☐ PATTERNS AND UML

題目說明： Define a class named PrimeNumber that stores a prime number. The default

constructor should set the prime number to 1. Add another constructor that allows the caller to set the prime number. Also, add a function to get the prime number. Finally, overload the prefix and postfix ++ and -- operators so they return a PrimeNumber object that is the next largest prime number (for ++) and the next smallest prime number (for --). For example, if the object's prime number is set to 13, then invoking ++ should return a PrimeNumber object whose prime number is set to 17.
Please use the following main program to test for the class.

```cpp
int main()
{
    PrimeNumber p1, p2(13);

    cout << p1.get() << endl;
    cout << p2.get() << endl;

    PrimeNumber p3 = p1++;
    cout << p3.get() << endl;

    PrimeNumber p4 = p2++;
    cout << p4.get() << endl;

    PrimeNumber p5 = p2--;
    cout << p5.get() << endl;

    return 0;
}
```

IO 範例 :

	Sample Input	Sample Output
第一組測資與輸出	Input-main1.cpp	output1.txt
第二組	Input-main 2.cpp	output2.txt
第三組	Input-main 3.cpp	output3.txt
…		

附屬資料：

☑解答程式：PrimeNumber.h, PrimeNumber.cpp(檔名)

☑測試資料：main_1.cpp, main_2.cpp, main_3.cpp, output1.txt, output2.txt, output3.txt

■ 易，僅需用到基礎程式設計語法與結構

□中，需用到多項程式設計語法與結構

□難，需用到多項程式結構或較為複雜之資料型態或結構

解題時間：25 分鐘。

其他註記：若 PrimeNumber=2 時, 當其做--operator 時, 其結果為 1